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PATENT  
IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

|                         |   |                            |
|-------------------------|---|----------------------------|
| In re Application of    | ) |                            |
|                         | ) | Examiner: Kim, Christopher |
| Dr. Ewald Schmon        | ) |                            |
|                         | ) | Group Art Unit: 3752       |
| Appl. No.: 09/727,465   | ) |                            |
|                         | ) |                            |
| Filed: December 4, 2000 | ) | Atty. Dkt. No.: 4003.450   |
|                         | ) |                            |
| For: A PAINT SPRAY GUN  | ) |                            |

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APPEAL BRIEF PURSUANT TO 37 CFR §1.192

Sir:

This is an appeal to the Board of Appeals from a decision mailed December 30, 2003, in which the Examiner finally rejected claims 12-22 of the above-identified application. Appellant has timely filed a Notice of Appeal by certification on March 30, 2004. This brief is being filed pursuant to that Notice of Appeal.

The filing date of the Notice of Appeal is March 30, 2004. Therefore, this brief is due on or prior to June 1, 2004 (taking into account the weekend and the holiday) under 37 C.F.R. §1.192(a), and is deemed to be timely filed.

1. REAL PARTY IN INTEREST

Appellant Dr. Ewald Schmon filed this application on December 4, 2000. The real party in interest in the present appeal is SATA-Farbspritztechnik GmbH & Co., having acquired rights from the aforementioned Appellant by way of an Assignment recorded on March 12, 2001 at Reel 011884, Frame 0878.

2. RELATED APPEALS AND INTERFERENCES

No related appeals or interferences are known to Appellant or Appellant's legal representative which will directly affect or be directly affected by or have bearing on the Board's decision in this appeal.

3. STATUS OF CLAIMS

Claims 12-22 are presently pending in the application. Claims 12-22 stand rejected under 35 U.S.C. §103. The rejection of Claims 12-22 is being appealed.

4. STATUS OF AMENDMENTS

The Examiner issued a non-final office action dated July 25, 2003 to which Applicant responded by way of an Amendment dated October 27, 2003. Subsequently, the Examiner issued a final office action dated December 30, 2003, finally rejecting Claims 12-22. In response thereto, Applicants filed a Notice of Appeal dated March 30, 2003, from which the present Appeal Brief is being filed. Accordingly, all amendments filed by Appellant have been entered in this case.

5. SUMMARY OF INVENTION

The present invention is directed to a spray gun having unique structural components which overcome problems with existing spray guns.

By way of background, known spray guns use fine threads which have a tendency to accumulate dirt and which require at least five revolutions to screw the air nozzle ring onto the gun body or to unscrew it therefrom. Moreover, they are prone to cross-threading, which results in damage to the threads. Therefore, there is a need for new and better threads to overcome these and other problems. One possibility is the use of trapezoidal-shaped threads. However, known threads which are trapezoidal in shape are not well-suited for use in spray guns, as they would require reinforcement of the wall of both the gun body and the air nozzle ring in the area of the trapezoid thread. This would result in an undesirable increase in the weight of the gun body by

approximately 10%, and thus an increase in the overall weight of the spray gun (thereby increasing the strain on the user).

Another disadvantage of standard trapezoidal threads is that their large flank clearance may cause cross-threading of the air nozzle ring, which may cause the air nozzle ring to lean to one side. As a result, the centers of the air nozzle and the paint nozzle would not be in alignment, thereby negatively affecting the paint stream. Moreover, it has been determined that the substantially larger pitch of a standard trapezoid thread is not easier to clean than a fine thread. Thus, there is a need to develop threads for use in paint spray guns which overcome the aforementioned problems attendant to known paint spray guns, and it is to this need that the present invention is directed.

A spray gun of the present invention has a gun body with a male thread and an air nozzle ring with a female thread, whereby the female thread is screwed onto the male thread to engage the air nozzle ring with the gun body. The critical component of the present invention is the unique structure of these male and female threads, which have the following characteristics:

- 1). trapezoidal in shape,
- 2). flank angle of approximately 30°,
- 3). thread diameters between about 30 and about 40 mm,
- 4). thread heights of approximately 1.1 mm,
- 5). root to crest clearance of approximately 0.1 mm; and
- 6). flank clearance of approximately 0.15 mm.

Figure 2 of the present application (appended hereto as Exhibit A) illustrates these important thread characteristics. Through the use of these inventive threads, spray guns of the present invention overcome numerous of the aforementioned disadvantages of known spray guns.

In particular, threads of the present invention are resistant to dirt accumulation, require fewer revolutions to screw the air nozzle onto the gun body or to unscrew the air nozzle from the gun body (as compared to known threads), are less prone to cross-threading (and therefore less prone to damage), do not require thickening of the threaded walls of the air nozzle ring or the

gun body in order to accommodate them, and permit the air nozzle ring to be more perfectly centered when screwed onto the gun body.

Accordingly, the novel threads of the present invention permit numerous advantages over known threads, both fine and trapezoidal, and are uniquely suited for use in spray guns of the present invention.

6. ISSUES

The issue on appeal is:

A. Are the claims patentable as nonobvious over the prior art, as required by 35 U.S.C §103, or are they an obvious improvement of U.S. Patent No. 6,250,567 (“Lewis”) in view of U.S. Patent No. 4,906,151 (“Kubis”)?

7. GROUPING OF CLAIMS

The claims stand or fall together for the contested grounds of rejection for the sole purpose of allowing the Board to select a single claim for review, and to decide the appeal as to the grounds of rejection on the basis of that claim alone.

8. ARGUMENT

A. CLAIMS 12-22 DEFINE A PATENTABLE INVENTION AND ARE NOT AN OBVIOUS IMPROVEMENT OF U.S. PATENT NO. 6,250,567 (“LEWIS”) IN VIEW OF U.S. PATENT NO. 4,906,151 (“KUBIS”).

a. Examiner’s Rejection

In the final office action dated December 30, 2003, the Examiner maintained the rejection of Claims 12-22 under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 6,250,567 (“Lewis”) in view of U.S. Patent No. 4,906,151 (“Kubis”). The Examiner alleges that Lewis

discloses a spray gun comprising a gun body 14, an air nozzle ring 18 and a trapezoidal thread 51 (Appellant notes that Lewis has two distinct elements labeled 51. Figure 4 shows 51 as a thread, whereas Figure 6 shows 51 as spray droplets. It is clear that the Examiner is referring to thread 51 shown in Figure 4).

The Examiner states that the device of Lewis is for spraying single or multicomponent material such as polyurethane, but that Lewis is not precluded from spraying paint. The Examiner alleges that it would have been obvious to one of ordinary skill in the art at the time of the present invention to provide paint to the device of Lewis. The Examiner goes on to acknowledge that Lewis does not disclose any of the ranges, flank angle, thread height, root to crest clearance, flank clearance, pitch, core diameter and outer diameter tolerance, pitch tolerance or nominal diameter, despite the fact that these are all critical elements of the claimed invention. Rather, the Examiner states that these are known parameters of a trapezoid thread.

Applicant respectfully points out, however, that the fact that trapezoidal-shaped threads existed prior to the present invention is not in question. What is critical in the present invention is the specifically claimed parameters set forth for the inventive threads, as it is these parameters that provide the present invention with advantages over known spray guns, a point that the Examiner fails to acknowledge.

The Examiner goes on to state that Kubis discloses male and female trapezoidal threads in Figure 2 defining diameters, thread height, root to crest clearance and flank clearance. However, Kubis is merely disclosing parameters of the trapezoidal thread of that invention (which is for an insert for a screw and is entirely unrelated to the present invention) and does not set forth the specific claimed parameters of threads of the present invention, let alone their use in a paint spray gun to provide the benefits which are provided for by the present invention. Importantly, the Examiner acknowledges that Kubis merely describes known parameters of a trapezoidal thread (Final Office Action, page 3, lines 17-19). From this, the Examiner reasons that one skilled in the art would be able to obtain “optimum or workable ranges” for the threads of the present invention. Even if, *arguendo*, Kubis provided such ranges, they would only be relevant to a discussion of screw inserts, which has nothing to do with the present invention.

The Examiner's reasoning could only apply if Kubis was individually or in combination with another reference directed to solving the problems with known spray guns (such problems being discussed above) and provided a range of characteristics for trapezoidal threads useful for securing an air chamber to a gun body, wherein the range of characteristics included the presently claimed thread characteristics. But this is not the case. As discussed *infra*, the Examiner has not provided any references which alone or in combination describe the problems with known threads for securing an air chamber to a spray gun body and which describe trapezoidal threads for use in spray guns which teach or suggest the precise parameters of the claimed threads to overcome the problems known in the art. Importantly, the Examiner has also not provided any motivation to combine the cited references. In summary, the Examiner has failed to establish even a *prima facie* case of obviousness.

The Lewis and Kubis references will be discussed in more detail:

b. The Lewis Reference

Applicants have thoroughly read Lewis in its entirety, and respectfully submit that Lewis is not relevant to a discussion of the present invention.

Lewis discloses a spray gun assembly which includes a delivery tube 14 that is completely separate from the air chamber. In doing so, the spray gun of Lewis prevents the curing of materials within the air chamber (and otherwise prevents any material from contacting the air chamber). After use, all materials remain in the delivery tube, which is discarded. The advantage of Lewis is therefore that the material being applied does not come into contact with the internal passageways of the spray assembly and therefore does not clog those passageways. This is a completely different approach to solving certain problems known with spray guns than that taken by the present invention.

The Examiner relies on Lewis for the disclosure of threads 51, which are trapezoidal in shape and are merely for properly guiding the delivery tube into the air manifold 18. In addition

to threads 51, Lewis describes additional threads 53 which cut into the delivery tube to secure it to the air manifold. Threads 51 are common trapezoidal threads of no specific dimensions and purport to work for their intended guiding purpose. There is no suggestion in Lewis that the provided trapezoidal threads 51 are unsuitable in any way and, most importantly, these threads serve a very different purpose from the threads of the present invention. The advantage in Lewis is in the delivery tube, not in the threads. Moreover, there is no teaching or suggesting in Lewis that threads 51 should or could be modified to serve some other purpose.

Simply stated, Lewis purports to solve certain problems known to exist with spray guns in a completely different manner than that of the present invention.

c. The Kubis Reference

The Examiner attempts to remedy the deficiencies of Lewis by combining Lewis with Kubis, despite the fact that Kubis is not directed to any manner of spray gun. As Kubis does not relate to spray guns, it follows, of course, that Kubis neither addresses problems attendant to spray guns nor the manner in which such problems could be solved (let alone solving them by using a spray gun with the precise thread structure of the present invention). Rather, Kubis is directed to an insert which is useful between a screw and a material to receive the screw. This insert has threads which purport to create a tight seal between the screw and the material, where such a seal may not exist in the absence of the insert. Kubis describes a particular thread orientation for the external and internal threads on this insert which permit this secure fit. In short, Kubis merely describes trapezoidal threads in an application completely different from that of the present invention.

d. Section 103 Rejection

For a rejection to be proper under 35 U.S.C. §103, the Examiner must establish a *prima facie* case of obviousness. To do so, three criteria must be met: (1) there must be some

suggestion or motivation to modify the reference or to combine reference teachings; (2) there must be a reasonable expectation of success; and (3) the reference must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). The burden is on the examiner to provide some suggestion of the desirability of doing what the inventor has done. *Ex parte Clapp*, 227 USPQ 972, 973 (Bd. Pat. App. & Inter. 1985). In the present application, the Examiner has clearly failed to meet this burden.

As discussed above, Lewis discloses only a spray gun that has as its inventive feature a disposable delivery tube. The delivery tube is aligned and secured within the spray apparatus through the use of standard trapezoidal and other threads. Lewis does not teach or suggest the desirability of modifying these threads in order to solve any problems. Quite the opposite, Lewis purports to solve certain problems known with spray guns through an entirely different means, namely a disposable delivery tube. The threads described in Lewis are an incidental aspect of that invention and one skilled in the art reading Lewis would not be lead to modify these threads and, in particular, would not be led to modify them in the specific way that they have been modified in the present invention.

Kubis, as discussed, is not related to spray guns at all and certainly cannot make up for the noted deficiencies with Lewis. Kubis discloses a specific trapezoidal thread for use in an insert to be received by a material (such as metal or wood) and into which a screw is introduced. The specific trapezoidal structure of Kubis is for allowing the threaded insert to remain small (as it must fit in a very limited space) and to ensure a good seal.

The Examiner states that Kubis is evidence that diameters, thread height, root to crest clearance and flank clearance are known parameters of a trapezoidal thread, and that it is knowledge within one of ordinary skill in the art to provide particular values or ranges of diameters, thread height, root to crest clearance and flank clearance for optimum or working ranges. Applicant respectfully points out, however, that Kubis does not provide "particular values or ranges" of trapezoidal threads for use in securing a paint spray gun to an air nozzle,



which is the present invention. Therefore, one skilled in the art could not be lead to work with any such ranges to obtain the specific characteristics of the present invention. At most, such ranges provided in Kubis would be useful for determining optimal characteristics of an insert for a screw.

Furthermore, in the final office action, the Examiner acknowledges Applicant's argument that there is no suggestion to combine the references. The Examiner then states that it is recognized that such a suggestion, motivation or teaching is required. However, the Examiner still fails to provide any such suggestion, motivation or teaching and then goes on to make conclusory statements that the standard guiding threads of Lewis, in view of the screw insert threads of Kubis, would lead one of skill in the art to the present invention.

Simply stated, the Examiner has failed to provide one or more references which describe the relationship of air chamber and gun body threads to problems known with spray guns, let alone the use of trapezoidal threads as related to such problems. The Examiner also has failed to provide a reference disclosing such trapezoidal threads used in such an application which provide, at the least, a broad set of parameters from which one skilled in the art would be able to work in order to develop trapezoidal threads for securing a spray gun body to an air chamber, wherein the threads have the specific characteristics claimed in the present invention.

Accordingly, Appellant respectfully submits that the Examiner has failed to set forth even a *prima facie* case of obviousness and the outstanding ground of rejection under 35 USC 103(a) is improper and should be reversed.

## 9. CONCLUSION

For the reasons set forth above, Appellant respectfully submits that the present invention is a patentable invention that is not obvious in view of the prior art. Accordingly, the Board is respectfully requested to reverse the appealed decision of the Examiner.

Date: 6-1-2004

Respectfully submitted,



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10. APPENDIX

Appealed Claims

12. In a spray paint gun comprising a gun body having a male thread, and  
an air nozzle ring having female thread, the female thread being adapted to be screwed  
onto the male thread, the improvement comprising:  
wherein the male and female threads are trapezoid threads having a flank angle of  
approximately 30°, wherein the male and female threads have thread diameters between about 30  
and about 40 mm, and wherein the male and female thread are characterized by:  
thread heights of approximately 0.1 mm, and  
flank clearance of approximately 0.15 mm.
13. A spray gun according to claim 12, wherein the male and female threads are further  
characterized by a pitch of approximately 2.5 mm.
14. A spray gun according to claim 12 or 13, wherein the core diameter and the outer diameter  
of the male thread of the gun body have a tolerance of approximately -0.05mm, respectively.
15. A spray gun according to claim 12 or 13, wherein the core diameter and the outer diameter  
of the male thread of the gun body have a tolerance of approximately -0.05mm, respectively.
16. A spray gun according to claim 12 or 13, wherein the core diameter and the outer diameter  
of the female thread of the air nozzle ring have a tolerance of approximately +0.1 mm,  
respectively.
17. A spray gun according to claim 12 or 13, wherein the core diameter and the outer diameter  
of the female thread of the air nozzle ring have a tolerance of approximately +0.1 mm,  
respectively.

18. A spray gun according to claim 14, wherein the core diameter and the outer diameter of the female thread of the air nozzle ring have a tolerance of approximately +0.1 mm, respectively.
19. A spray gun according to claim 15, wherein the core diameter and the outer diameter of the female thread of the air nozzle ring have a tolerance of approximately +0.1 mm, respectively.
20. A spray gun according to claim 13, wherein the pitch has a tolerance of approximately 0.01 mm.
21. A spray gun according to claim 12, wherein the male thread has a nominal diameter of about 38 mm.
22. A spray gun according to claim 13, wherein the male thread has a nominal diameter of about 38 mm.